

Ingo Frommholz

PhD (Dr. rer. nat.), Diplom-Informatiker, FBCS, FHEA

Current Position

Reader (~Associate Professor) in Data Science at the University of Wolverhampton, UK
Adjunct Professor (Lehrbeauftragter) at the Bern University of Applied Sciences, Switzerland

Summary

- Interested in Deep Learning, AI and NLP for human-centred Information Retrieval and Data Science
- Founder and head of the Data Science and AI Research group at the University of Wolverhampton. Deputy director Digital Innovations and Service Centre (DISC) at the University of Wolverhampton
- Chair, BCS Information Retrieval Specialist Group (BCS-IRSG)
- PhD in Computer Science (Dr. rer. nat., summa cum laude), University of Duisburg-Essen, Germany
- Funding/PI: EU Horizon Europe MSCA Staff Exchange project OMINO on Information Overload (2023-2027, UKRI guarantee funding, total 1,550,200.00€, own part 253,000€); EU H2020 ETN QUARTZ on quantum mechanics and information retrieval (2016-2020, total 3,461,495.04€, own part 546,757.76€); Internally funded RIGHT project on deep learning for digital humanities (since 2023, GBP 612,621). PI of further smaller research and knowledge transfer projects.
- Published more than 100 refereed and unrefereed articles, preprints, reports, proceedings, books and book sections
- Senior managing editor of the International Journal on Digital Libraries (Springer)
- General Chair ACM CIKM 2023, Birmingham (Core-A-ranked conference with 750 delegates)
- Steering committee member, ACM CIKM (Core-A-ranked conference) and ACM SIGIR-ICTIR conference series
- Chair and (senior) programme committee member of several world-leading conferences and journals in Information Retrieval, AI and Digital Libraries
- Organiser of several international workshops (e.g., BIR, BIRNDL, BIRDS, BCS Search Solutions, FDIA) and schools (ESSIR, ASIRF)
- Course and programme co-ordinator for Computer Science, Data Science and Artificial Intelligence undergraduate and postgraduate programmes; module co-ordinator and lecturer in the UK, Germany, Switzerland, Oman and Jordan of several Computer Science topics at undergraduate and postgraduate level, such as: Information Retrieval, Machine Learning and Artificial Intelligence, Data Mining, Data Science, Cybermetrics and Statistics, Data Engineering, Databases and Data Modelling, Programming and Data Structures, Distributed Computing
- Supervised 8 PhD students to successful completion; examiner for 11 PhD candidates in the UK, Denmark, Finland, The Netherlands, Italy and Germany
- BCS Fellow (FBCS), ACM Member (SIGIR), Advance HE Fellow (FHEA)
- External examiner, University of Strathclyde, Glasgow, UK and University of Sheffield, UK

Education

- 2008 **PhD (Dr. rer. nat.) in Computer Science**, *University of Duisburg-Essen*, Duisburg, Germany
- 2001 **Diplom-Informatiker (MSc Computer Science equivalent)**, *University of Dortmund*, Germany
- 2012 **Postgraduate Certificate in Academic Practice (PgCAP)**, *University of Bedfordshire*, Luton, UK
- 2007 **Certificate in professional teaching competence in higher education**, *University of Duisburg-Essen*, Duisburg, Germany

Professional Experience

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- 12/2020– Present **Reader (Associate Professor equivalent) in Data Science**, *School of Engineering, Computing and Mathematical Sciences, University of Wolverhampton, UK*
- 02/2023– Present **Adjunct Professor (Lehrbeauftragter)**, *School of Engineering and Computer Science, Bern University of Applied Sciences, Biel/Bienne, Switzerland*
- 02/2011– 11/2020 **Lecturer/Senior Lecturer**, *School of Computer Science and Technology, University of Bedfordshire, Luton, UK*
- 2012–2018 **Search and Data Science Consultant**, *Self Employed, London, UK*
- 11/2008– 01/2011 **Postdoctoral Research Associate**, *Information Retrieval Group, School of Computing Science, University of Glasgow, Glasgow, Scotland*
- 10/2004– 10/2008 **Research Assistant**, *Information Systems Group, Faculty of Engineering Sciences, University of Duisburg-Essen, Duisburg, Germany*
- 3/2006– 4/2006 **Visiting researcher**, *Information Management Systems Research Group, University of Padua, Italy*
- 3/2001– 9/2004 **Research Assistant**, *Fraunhofer Integrated Publication and Information Systems Institute (IPSI), Darmstadt, Germany*
- 11/1994– 2/2001 **Software Developer**, *Several companies: adesso GmbH, o.tel.o GmbH, Lion Ges. für Systementwicklung mbH, Bochum, Düsseldorf, Dortmund, Germany*

Selected Research and Industry Grants

Successful Research Grants

Grants to which I contributed significantly in a leading role to the successful bid and/or have been the Principle Investigator (PI) and work package leader.

- 2023–2026 **OMINO**, *University of Wolverhampton, UK*
EU Horizon Europe MSCA Staff Exchange project (guarantee funded by UKRI/EPSCRC) on tackling Information Overload (total worth GBP 1,342,174 (EUR 1,550,200.00), own part GBP 218,036 (EUR 253,000)).
- 2023–2024 **RIGHT – Responsible Digital Humanities Lab**, *University of Wolverhampton, UK*
Internally funded project on deep learning for digital humanities (worth GBP 612,621).
- 2023–2024 **LASER**, *University of Wolverhampton, UK*
Internally funded PhD project on large language models in information retrieval (worth GBP 39,000). PI and single proposal author.
- 2016–2020 **QUARTZ**, *University of Bedfordshire, Luton, UK*
EU H2020 Marie Curie ITN European Training Network on quantum-based information access and retrieval (worth GBP 2,996,988 (EUR 3,461,495.04), own part GBP 473,387 (EUR 546,575.76)).
- 2012–2013 **Rising Star**, *University of Bedfordshire, Luton, UK*
Internal Research Investment Rising Star Funding on Query Session Processing for Information Seeking and Searching (GBP 6,000).
- 2010–2011 **QONTEXT**, *University of Glasgow, Glasgow, UK*
EU Marie Curie FP7-IRSES project on information retrieval and quantum theory.
- 2004–2006 **CLASSIX**, *University of Duisburg-Essen, Duisburg, Germany*
German Research Foundation (DFG) project on classification and intelligent search on information in XML.

Successful KTP and Industry Grants

I led the successful bids and have been the Principle Investigator (PI) and lead academic.

- 2016–2019 **Drax Technology Ltd**, *University of Bedfordshire, Luton, UK*
Innovate UK Knowledge Transfer Partnership with Drax Technology on Internet of Things, machine learning and intelligent fire alarms (worth GBP 134,752).

- 2012–2018 **NotActivelyLooking.com**
Private consultancy project on the design and implementation of a search engine for executives (in collaboration with industry partners, worth ca. GBP 20,000).
- 2016–2017 **Wardown Park Talking Objects**, *University of Bedfordshire*, Luton, UK
Digital Humanities KTP project with Wardown Park Museum, Luton, combining augmented reality and conversational information retrieval (Luton Cultural Services Trust, GBP 18,971).
- 2015 **EduVocation**, *University of Bedfordshire*, Luton, UK
Teacher recruitment site and information system based on linked open data (UK Innovation Voucher, GBP 5,000).
- 2013–2015 **Luton Culture World War I project**, *University of Bedfordshire*, Luton, UK
Digital Museum and Linked Data project on World War I in conjunction with Luton Museum (UK Lottery Fund, GBP 16,000).
- 2006 **KIIB**, *University of Duisburg-Essen*, Duisburg, Germany
EU-EUREGIO project on business processes and email classification, in collaboration with d.velop AG, Gescher, Germany.

Further Research Projects: EDISON (University of Bedfordshire): EU H2020 Coordination and Support Action to accelerate the creation of Data Science profession; RENAISSANCE (University of Glasgow): EPSRC project on retrieval models based on the quantum theory framework; LACOSTIR (University of Duisburg-Essen): DFG project on interactive retrieval; DELOS (University of Duisburg-Essen): EU-FP6 Network of Excellence on Digital Libraries; BRICKS (Fraunhofer IPSI): EU-FP6 integrated project on distributed resources for integrated cultural knowledge services; VIP-ADVISOR (Fraunhofer IPSI): EU-FP5 project (IST-2001-32440) on a virtual advisor for personal insurance and finance risk management; COLLATE (Fraunhofer IPSI): EU-FP5 project (IST-1999-20882) on the development of a collaboratory for annotation, indexing and retrieval of digitized historical archive material; SCHOLNET (Fraunhofer IPSI): EU-FP5 project (IST-1999-20664) on a digital library infrastructure for supporting communication and collaboration among networked scholarly communities.

Further Knowledge Transfer Projects: SOLVD (University of Wolverhampton): EU European Regional Development Fund to support SMEs in the adoption of digital technologies; CRASH (University of Bedfordshire): Cyber Risk Assessment of Stalking and Harassment.

Selected Publications

Published more than 100 refereed and unrefereed articles, preprints, reports, proceedings, books and book sections. A selection can be found here.

- [1] Kanishka Silva, Ingo Frommholz, Burcu Can, Fred Blain, Raheem Sarwar, and Laura Ugolini. Forged-GAN-BERT: Authorship Attribution for LLM-Generated Forged Novels. In Neele Falk, Sara Papi, and Mike Zhang, editors, *Proceedings of the 18th Conference of the European Chapter of the Association for Computational Linguistics (EACL 2024): Student Research Workshop*, pages 325–337, St. Julian's, Malta, March 2024. Association for Computational Linguistics. Contribution: 35%.
- [2] Janusz A. Hołyst, Philipp Mayr, Michael Thelwall, Ingo Frommholz, Shlomo Havlin, Alon Sela, Yoed N. Kenett, Denis Helic, Aljoša Rehar, Sebastijan R. Maček, Przemysław Kazienko, Tomasz Kajdanowicz, Przemysław Biecek, Bolesław K. Szymanski, and Julian Sienkiewicz. Protect our environment from information overload. *Nature Human Behaviour*, pages 1–2, February 2024. Access via sharable link: <https://tinyurl.com/3anxzajc> – Original URL: <https://www.nature.com/articles/s41562-024-01833-8>. Contribution: 20%.
- [3] Karen Chessum, Haiming Liu, and Ingo Frommholz. An Extended Study of Search User Interface Design Focused on Hofstede's Cultural Dimensions. In Andreas Holzinger, Hugo Plácido Da Silva, Jean Vanderdonckt, and Larry Constantine, editors, *Computer-Human Interaction Research and Applications*, volume 1882, pages 130–152, Cham, 2023. Springer Nature Switzerland. Contribution: 35%.
- [4] Amit Kumar Jaiswal, Haiming Liu, and Ingo Frommholz. Semantic Hilbert Space for Interactive Image Retrieval. In *ICTIR 2021 - Proceedings of the 2021 ACM SIGIR International Conference on Theory of Information Retrieval*, pages 307–315, 2021. Contribution: 35%.

- [5] Ingo Frommholz, Haider Al-Khateeb, Martin Potthast, Zinnar Ghasem, Mitul Shukla, and Emma Short. On Textual Analysis and Machine Learning for Cyberstalking Detection. *Datenbank-Spektrum*, 16(2):127–135, 2016. Lead author, 75% contribution.
- [6] Ingo Frommholz and Thomas Roelleke. Scalable DB+IR Technology: Processing Probabilistic Datalog with HySpirit. *Datenbank-Spektrum*, 16(1):39–48, 2016. Lead author, 80% contribution.
- [7] Muhammad Kamran Abbasi and Ingo Frommholz. Cluster-based Polyrepresentation as Science Modelling Approach for Information Retrieval. *Scientometrics*, 102(3):2301–2322, 2015. Contribution: 40%.
- [8] Ingo Frommholz, Birger Larsen, Benjamin Piwowarski, Mounia Lalmas, Peter Ingwersen, and Keith Van Rijsbergen. Supporting Polyrepresentation in a Quantum-inspired Geometrical Retrieval Framework. In Paul Clough, Colum Foley, Cathal Gurrin, Gareth J. F. Jones, and Wessel Kraaij, editors, *IliX '10: Proceedings of the Third Symposium on Information Interaction in Context (IliX 2010)*, pages 115–124. ACM, 2010. Lead author, 95% contribution.
- [9] Benjamin Piwowarski, Ingo Frommholz, Mounia Lalmas, and Keith van Rijsbergen. What can Quantum Theory bring to Information Retrieval? In *CIKM '10: Proceedings of the 19th ACM International Conference on Information and Knowledge Management*, pages 59–68, 2010. Contribution: 40%.
- [10] Ingo Frommholz and Norbert Fuhr. Probabilistic, Object-oriented Logics for Annotation-based Retrieval in Digital Libraries. In Michael Nelson, Cathy Marshall, and Gary Marchionini, editors, *Proc. of the 6th ACM/IEEE Joint Conference on Digital Libraries (JCDL 2006)*, pages 55–64, New York, 2006. ACM. Lead author, 100% contribution.